

Name: \_\_\_\_\_

# Grade 6

## PATTERNING & ALGEBRA: NUMBER PATTERNS AND TERMS

Don't forget to play *Number Grid (Random-Medium level)*. Go to **mathfrog.ca** for the link.

1. State a rule for each number pattern. Use your rule to fill the empty boxes.

a. 912, 908, , 900, , 892, 888 ... Pattern: \_\_\_\_\_

b. 3, 12, 48, , 768, , 12288 ... Pattern: \_\_\_\_\_

c. 7.1, 10.7, 14.3, , , 25.1 ... Pattern: \_\_\_\_\_

d. , , 42, 44, 39, 41, , 38 ... Pattern: \_\_\_\_\_

e. , , 2, 3, 5, 8, 13, ,  ... Pattern: \_\_\_\_\_

2. Use the given rule to predict the number of each term. The first one has been done for you.

a. Start with 3 and add 2 to each term.

- 17 is the *eighth* term.
- 23 is the \_\_\_\_\_ term.
- 47 is the \_\_\_\_\_ term.

b. Start with 100 and subtract 1 from each term.

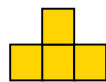
- 93 is the \_\_\_\_\_ term.
- 80 is the \_\_\_\_\_ term.
- 1 is the \_\_\_\_\_ term.

### DID YOU KNOW?

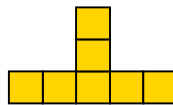
In 2009, more than 50% of the people in the world had never made or received a telephone call.



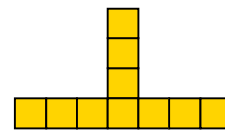
3. Matt uses blocks to build the following pattern of shapes.



SHAPE 1



SHAPE 2



SHAPE 3

- How many blocks will he need to build the sixth shape? \_\_\_\_\_
- In total, how many blocks will he need to build the first six shapes? \_\_\_\_\_
- If Matt continues his pattern, how many blocks will he need to build the 16<sup>th</sup> shape?  
Explain your answer.  
\_\_\_\_\_

4. For each table, write a rule that relates the first two columns to the third.

A	B	C
3	7	22
4	6	25
1	1	2
5	5	26

a. Rule: \_\_\_\_\_  
\_\_\_\_\_

A	B	C
3	1	4
7	4	5
7	6	3
2	0	4

b. Rule: \_\_\_\_\_  
\_\_\_\_\_

A	B	C
2	7	28
1	6	12
4	7	56
3	11	66

c. Rule: \_\_\_\_\_  
\_\_\_\_\_

5. Risha, Devin and Alice each create a number pattern.

**RISHA: 15, 18, 21, 24, 27, 30 ...**

**DEVIN: 15, 16, 18, 21, 25, 30 ...**

**ALICE: 50, 47, 44, 41, 38, 35 ...**



- a. State one difference between Devin's pattern and Alice's pattern.

\_\_\_\_\_

- b. State one similarity between Risha's pattern and Alice's pattern.

\_\_\_\_\_

- c. State one similarity and one difference between Risha's pattern and Devin's pattern.

\_\_\_\_\_

6. Complete the T-table for each pattern below. Write a formula to describe how each term (T) is related to the number (N). Using this formula, write the 10<sup>th</sup> and 15<sup>th</sup> term of each pattern.

- a. 4, 7, 10, 13, 16 ...

Number (N)	Term (T)
10	
15	

T = \_\_\_\_\_

- b. 48, 46, 44, 42, 40 ...

Number (N)	Term (T)
10	
15	

T = \_\_\_\_\_

- c. 1.5, 2.0, 2.5, 3.0 ...

Number (N)	Term (T)
10	
15	

T = \_\_\_\_\_

### TRY THIS!

Five 9-letter words have been separated into the fifteen 3-letter pieces below. Using each 3-letter piece exactly once, re-assemble the pieces to form the original five 9-letter words.

ENT      LIB      ETH      LIG      ING      ING  
           ORT      IMP      FER      IAN      DIF  
               SOM      HTN      RAR      ANT

1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_ 4. \_\_\_\_\_ 5. \_\_\_\_\_